

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P907885

Luminaire Tested: DFN2DIP-HX2F0-020D040US840-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907885  
REPORT IS A COMBINATION OF REPORTS P900692 AND P897595  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-020D040US840-RLLONL  
Description: 2 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

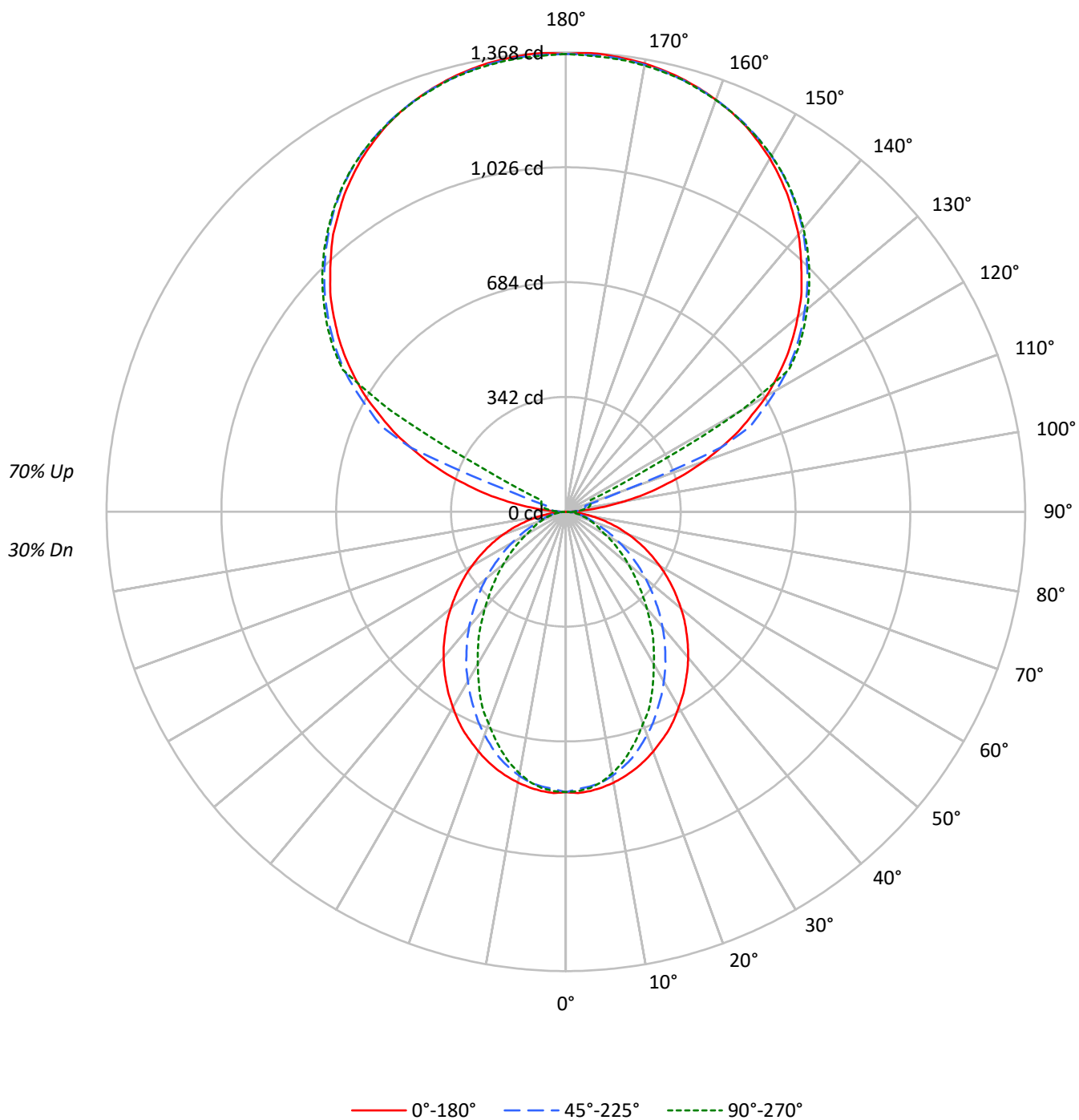
Lumens per Lamp: N/A  
Luminaire Lumens: 5715.8 lumens  
Efficiency: N/A  
Efficacy: 128.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 44.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    | 20 |
| RC  | 80  |     |     |     | 70 |    |    |    | 50 |    |    |    | 30 |    |    |    | 10 |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 |
| 1   | 94  | 90  | 86  | 83  | 84 | 81 | 77 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 32 |
| 2   | 85  | 78  | 73  | 68  | 76 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 40 | 39 | 30 | 29 | 28 |
| 3   | 78  | 69  | 62  | 57  | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 25 | 24 |
| 4   | 71  | 61  | 54  | 48  | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 28 | 24 | 22 | 21 |
| 5   | 66  | 55  | 47  | 41  | 59 | 49 | 43 | 38 | 40 | 35 | 31 | 30 | 27 | 25 | 22 | 20 | 18 |
| 6   | 60  | 49  | 41  | 36  | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 |
| 7   | 56  | 44  | 37  | 31  | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 |
| 8   | 52  | 40  | 33  | 28  | 46 | 36 | 30 | 25 | 29 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 37  | 29  | 25  | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 27  | 22  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 14 | 12 | 11 |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1967 | 1967 | 1967 |
| 5°  | 1967 | 1931 | 1944 |
| 10° | 1944 | 1888 | 1877 |
| 15° | 1914 | 1821 | 1776 |
| 20° | 1876 | 1731 | 1654 |
| 25° | 1836 | 1631 | 1535 |
| 30° | 1784 | 1528 | 1386 |
| 35° | 1733 | 1418 | 1255 |
| 40° | 1681 | 1305 | 1106 |
| 45° | 1621 | 1181 | 970  |
| 50° | 1559 | 1055 | 839  |
| 55° | 1493 | 921  | 712  |
| 60° | 1417 | 782  | 583  |
| 65° | 1329 | 642  | 521  |
| 70° | 1222 | 510  | 467  |
| 75° | 1088 | 441  | 417  |
| 80° | 896  | 358  | 351  |
| 85° | 585  | 220  | 246  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1621 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 78.2   | 1.4       |
| 10°-20°   | 214.8  | 3.8       |
| 20°-30°   | 301.5  | 5.3       |
| 30°-40°   | 328.7  | 5.8       |
| 40°-50°   | 302.1  | 5.3       |
| 50°-60°   | 237.3  | 4.2       |
| 60°-70°   | 154.4  | 2.7       |
| 70°-80°   | 79.5   | 1.4       |
| 80°-90°   | 22.7   | 0.4       |
| 90°-100°  | 44.9   | 0.8       |
| 100°-110° | 167.6  | 2.9       |
| 110°-120° | 444.4  | 7.8       |
| 120°-130° | 737.1  | 12.9      |
| 130°-140° | 783.0  | 13.7      |
| 140°-150° | 727.7  | 12.7      |
| 150°-160° | 585.1  | 10.2      |
| 160°-170° | 377.0  | 6.6       |
| 170°-180° | 129.8  | 2.3       |
| 0°-30°    | 594.5  | 10.4      |
| 0°-40°    | 923.2  | 16.2      |
| 0°-60°    | 1462.6 | 25.6      |
| 0°-90°    | 1719.2 | 30.1      |
| 90°-120°  | 656.9  | 11.5      |
| 90°-150°  | 2904.8 | 50.8      |
| 90°-180°  | 3997.0 | 69.9      |
| 0°-180°   | 5715.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 835  | 835   | 835  | 835   | 835  |      |
| 5°   | 835  | 831   | 821  | 828   | 826  | 79   |
| 15°  | 794  | 786   | 760  | 746   | 738  | 224  |
| 25°  | 721  | 696   | 647  | 616   | 604  | 331  |
| 35°  | 621  | 582   | 516  | 468   | 452  | 389  |
| 45°  | 508  | 457   | 378  | 324   | 306  | 392  |
| 55°  | 386  | 327   | 246  | 200   | 186  | 345  |
| 65°  | 261  | 199   | 132  | 106   | 104  | 258  |
| 75°  | 139  | 86    | 60   | 55    | 54   | 147  |
| 85°  | 32   | 17    | 14   | 14    | 14   | 37   |
| 90°  | 1    | 12    | 20   | 25    | 27   | 5    |
| 95°  | 64   | 32    | 38   | 43    | 42   | 76   |
| 105° | 300  | 330   | 60   | 71    | 75   | 320  |
| 115° | 567  | 584   | 609  | 152   | 81   | 558  |
| 125° | 802  | 815   | 834  | 840   | 843  | 715  |
| 135° | 992  | 1008  | 1017 | 1027  | 1025 | 767  |
| 145° | 1151 | 1150  | 1167 | 1174  | 1169 | 720  |
| 155° | 1268 | 1259  | 1271 | 1276  | 1269 | 584  |
| 165° | 1336 | 1330  | 1333 | 1340  | 1333 | 377  |
| 175° | 1366 | 1359  | 1361 | 1368  | 1358 | 130  |
| 180° | 1363 | 1363  | 1363 | 1363  | 1363 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 834.8 | 834.8 | 834.8 | 834.8 | 834.8 |
| 2.5°   | 838.5 | 834.8 | 826.4 | 834.0 | 832.5 |
| 5°     | 834.8 | 831.0 | 821.1 | 828.0 | 825.7 |
| 7.5°   | 828.0 | 823.4 | 812.8 | 815.9 | 812.0 |
| 10°    | 818.9 | 813.5 | 798.5 | 796.2 | 791.7 |
| 12.5°  | 807.6 | 800.7 | 780.3 | 775.9 | 767.5 |
| 15°    | 794.0 | 785.6 | 759.9 | 745.6 | 738.1 |
| 17.5°  | 778.1 | 766.0 | 734.3 | 717.6 | 705.6 |
| 20°    | 759.9 | 744.8 | 707.1 | 688.2 | 671.6 |
| 22.5°  | 740.3 | 723.0 | 679.1 | 653.5 | 642.2 |
| 25°    | 720.7 | 696.5 | 646.6 | 615.7 | 604.3 |
| 27.5°  | 697.3 | 671.6 | 616.4 | 580.9 | 563.5 |
| 30°    | 672.4 | 643.6 | 583.2 | 544.7 | 524.2 |
| 32.5°  | 648.1 | 613.4 | 551.5 | 506.1 | 487.3 |
| 35°    | 621.0 | 582.5 | 516.0 | 468.4 | 451.7 |
| 37.5°  | 594.5 | 552.9 | 482.7 | 430.6 | 411.7 |
| 40°    | 566.5 | 521.3 | 448.0 | 394.4 | 374.7 |
| 42.5°  | 537.9 | 489.6 | 413.2 | 357.3 | 338.5 |
| 45°    | 507.7 | 457.0 | 377.8 | 324.1 | 305.9 |
| 47.5°  | 479.0 | 425.4 | 343.8 | 290.0 | 273.5 |
| 50°    | 447.3 | 393.6 | 310.5 | 258.3 | 242.6 |
| 52.5°  | 416.2 | 359.5 | 278.7 | 228.9 | 214.6 |
| 55°    | 386.0 | 327.1 | 245.5 | 200.3 | 185.8 |
| 57.5°  | 355.1 | 294.6 | 216.1 | 173.8 | 161.7 |
| 60°    | 323.4 | 262.9 | 185.1 | 146.6 | 134.5 |
| 62.5°  | 292.4 | 232.0 | 158.6 | 122.4 | 116.3 |
| 65°    | 260.6 | 199.4 | 131.5 | 105.8 | 103.5 |
| 67.5°  | 230.5 | 169.2 | 105.8 | 92.9  | 90.7  |
| 70°    | 198.6 | 139.8 | 87.6  | 80.1  | 77.1  |
| 72.5°  | 168.4 | 112.5 | 73.2  | 67.3  | 65.7  |
| 75°    | 139.0 | 86.0  | 60.4  | 55.1  | 54.4  |
| 77.5°  | 109.6 | 61.2  | 47.6  | 44.5  | 43.0  |
| 80°    | 82.3  | 43.8  | 36.3  | 33.2  | 33.2  |
| 82.5°  | 57.4  | 29.5  | 24.9  | 23.4  | 23.4  |
| 85°    | 32.4  | 16.6  | 14.3  | 14.3  | 14.3  |
| 87.5°  | 12.1  | 6.1   | 6.1   | 5.3   | 5.3   |
| 90°    | 0.9   | 11.8  | 19.7  | 24.7  | 26.6  |
| 92.5°  | 24.7  | 20.7  | 23.6  | 25.7  | 26.6  |
| 95°    | 64.0  | 31.5  | 38.4  | 43.4  | 42.4  |
| 97.5°  | 115.4 | 34.5  | 50.3  | 53.3  | 54.2  |
| 100°   | 174.6 | 39.5  | 56.2  | 64.0  | 66.0  |
| 102.5° | 239.6 | 237.8 | 58.2  | 69.0  | 72.0  |
| 105°   | 299.8 | 329.5 | 60.2  | 71.0  | 74.9  |
| 107.5° | 369.9 | 394.6 | 62.2  | 73.0  | 77.0  |
| 110°   | 437.1 | 457.7 | 172.7 | 74.0  | 77.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 500.2  | 517.9  | 501.1  | 75.9   | 79.0   |
| 115°   | 567.1  | 583.9  | 608.6  | 151.9  | 81.0   |
| 117.5° | 625.4  | 645.1  | 662.0  | 520.8  | 262.4  |
| 120°   | 690.5  | 705.3  | 723.1  | 735.0  | 601.8  |
| 122.5° | 745.7  | 761.5  | 781.3  | 787.2  | 788.2  |
| 125°   | 801.9  | 814.9  | 833.5  | 840.5  | 843.4  |
| 127.5° | 853.2  | 867.1  | 881.9  | 891.8  | 892.7  |
| 130°   | 901.6  | 917.5  | 928.2  | 939.1  | 938.2  |
| 132.5° | 950.9  | 963.8  | 974.6  | 983.5  | 982.6  |
| 135°   | 992.4  | 1008.2 | 1017.0 | 1026.9 | 1025.0 |
| 137.5° | 1035.7 | 1047.5 | 1057.5 | 1067.3 | 1064.4 |
| 140°   | 1078.1 | 1086.1 | 1096.9 | 1105.8 | 1100.9 |
| 142.5° | 1113.8 | 1120.6 | 1133.5 | 1141.2 | 1136.4 |
| 145°   | 1151.2 | 1150.2 | 1166.9 | 1173.9 | 1168.9 |
| 147.5° | 1183.7 | 1180.7 | 1197.5 | 1202.4 | 1198.6 |
| 150°   | 1215.3 | 1208.4 | 1224.3 | 1230.1 | 1225.2 |
| 152.5° | 1241.9 | 1234.1 | 1248.8 | 1254.8 | 1247.9 |
| 155°   | 1267.6 | 1258.8 | 1270.6 | 1276.5 | 1268.6 |
| 157.5° | 1288.3 | 1280.4 | 1289.4 | 1296.3 | 1288.3 |
| 160°   | 1306.1 | 1300.1 | 1306.1 | 1311.9 | 1305.0 |
| 162.5° | 1321.8 | 1316.0 | 1320.9 | 1327.8 | 1318.9 |
| 165°   | 1335.6 | 1329.8 | 1332.7 | 1339.6 | 1332.7 |
| 167.5° | 1346.6 | 1340.5 | 1343.6 | 1350.5 | 1341.6 |
| 170°   | 1355.4 | 1349.5 | 1351.4 | 1358.4 | 1349.5 |
| 172.5° | 1361.3 | 1355.4 | 1357.5 | 1364.3 | 1355.4 |
| 175°   | 1366.1 | 1359.3 | 1361.3 | 1368.2 | 1358.4 |
| 177.5° | 1368.2 | 1361.3 | 1362.3 | 1369.3 | 1360.4 |
| 180°   | 1363.3 | 1363.3 | 1363.3 | 1363.3 | 1363.3 |

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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |      |      |      |      |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|------|------|------|------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7  | 0.5  | 0.5  | 0.3  |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3  | 0.5  | 0.3  | 0.3  |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2  | 0.2  | 0.2  | 0.2  |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |      |      |      |      |
| X=2H            | Y=2H | 7.14             | 7.83  | 8.26  | 8.94  | 10.47 | 3.12           | 3.81 | 4.24 | 4.92 | 6.45 |
|                 | 3H   | 8.78             | 9.40  | 9.90  | 10.51 | 12.06 | 4.28           | 4.90 | 5.41 | 6.02 | 7.57 |
|                 | 4H   | 9.37             | 9.95  | 10.50 | 11.07 | 12.62 | 4.72           | 5.30 | 5.85 | 6.42 | 7.97 |
|                 | 6H   | 9.76             | 10.30 | 10.90 | 11.42 | 12.98 | 5.01           | 5.55 | 6.16 | 6.67 | 8.24 |
|                 | 8H   | 9.87             | 10.38 | 11.02 | 11.52 | 13.07 | 5.09           | 5.60 | 6.24 | 6.74 | 8.30 |
|                 | 12H  | 9.92             | 10.40 | 11.07 | 11.53 | 13.11 | 5.12           | 5.61 | 6.27 | 6.74 | 8.32 |
| 4H              | 2H   | 7.14             | 7.72  | 8.28  | 8.84  | 10.39 | 3.69           | 4.27 | 4.83 | 5.39 | 6.94 |
|                 | 3H   | 8.92             | 9.41  | 10.07 | 10.55 | 12.12 | 5.00           | 5.49 | 6.15 | 6.63 | 8.20 |
|                 | 4H   | 9.59             | 10.04 | 10.74 | 11.17 | 12.76 | 5.53           | 5.98 | 6.68 | 7.11 | 8.70 |
|                 | 6H   | 10.07            | 10.46 | 11.23 | 11.61 | 13.19 | 5.92           | 6.31 | 7.08 | 7.46 | 9.04 |
|                 | 8H   | 10.23            | 10.59 | 11.39 | 11.74 | 13.33 | 6.04           | 6.40 | 7.19 | 7.54 | 9.14 |
|                 | 12H  | 10.31            | 10.63 | 11.48 | 11.79 | 13.39 | 6.09           | 6.41 | 7.26 | 7.57 | 9.17 |
| 8H              | 4H   | 9.54             | 9.90  | 10.70 | 11.05 | 12.64 | 5.79           | 6.14 | 6.94 | 7.29 | 8.88 |
|                 | 6H   | 10.08            | 10.37 | 11.25 | 11.56 | 13.15 | 6.28           | 6.57 | 7.45 | 7.76 | 9.35 |
|                 | 8H   | 10.28            | 10.53 | 11.46 | 11.70 | 13.31 | 6.45           | 6.71 | 7.63 | 7.88 | 9.49 |
|                 | 12H  | 10.39            | 10.62 | 11.58 | 11.78 | 13.43 | 6.55           | 6.78 | 7.73 | 7.94 | 9.58 |
| 12H             | 4H   | 9.49             | 9.81  | 10.66 | 10.97 | 12.57 | 5.78           | 6.10 | 6.95 | 7.26 | 8.86 |
|                 | 6H   | 10.05            | 10.31 | 11.23 | 11.47 | 13.08 | 6.32           | 6.57 | 7.50 | 7.74 | 9.35 |
|                 | 8H   | 10.25            | 10.47 | 11.43 | 11.64 | 13.28 | 6.51           | 6.73 | 7.69 | 7.90 | 9.54 |

END OF REPORT